RESEARCHERS OF CESGA, UDC and USC DEVELOP SOFTWARE TO EVALUATE THE PERFORMANCE OF THE UPC LANGUAGE

• UOMS will be presented at the International Supercomputing Conference 2010, in Hamburg, Germany

Santiago de Compostela, May, 2010.- A team of researchers from the Galicia Supercomputing Center (CESGA), the Computer Architecture Group of the University of A Coruña (UDC) and the Computer Architecture Group of the University of Santiago de Compostela (USC) has developed the first microbenchmarking suite for the parallel programming language Unified Parallel C (UPC). The software, named **UPC Microbenchmarking Operations Suite** (**UOMS**) will be released for its use by the research community and will serve as a test to check the performance of the UPC implementations. The new tool allows evaluators to test the execution performance of a series of operations, for a wide range of problem sizes and configurations, in current and future systems. This code is a part of the project ***"Improving UPC Usability and Performance in Constellation Systems: Implementation/Extensions of UPC Libraries"***, developed by CESGA, Hewlett Packard (HP), and the Computer Architecture groups of the UDC and USC.

The work introduces a suite that intends to cover the lack of evaluation software and tools for UPC compilers. PGAS (Partitioned Global Address Space) languages, as UPC, due to its youth, lack some necessary tools and libraries. UOMS addresses the lack of evaluation tools to assess the performance of UPC memory transfer functions, as well as computational collectives and synchronization operations. With the UOMS, UPC is ready to tackle the next step in its evolution.

LANGUAGES INCREASINGLY IMPORTANT

Traditional paradigms are becoming less effective for programming current HPC platforms. The introduction of manycore systems represent a significant architecture shift where message passing approaches do not naturally fit. Thus, the interest in new languages that overcome the complexity and programmability issues of current parallel libraries and languages is rising. For that reason PGAS languages, UPC in particular, are becoming increasingly important for nowadays parallel programming. HPC vendors are catching up and have their own implementations, and academia provided several open source compilers and runtimes to worldwide developers.

The code released will be presented at the International Supercomputing Conference 2010, the most prestigious conference in Europe in its field, which will be held next June in Hamburg, and is available now on the web upc.cesga.es.

Galicia Supercomputing Center (CESGA) is a Foundation taken part for the Galician Government (Xunta de Galicia) and for the Spanish National Research Council (CSIC). From its creation in 1993, CESGA has the mission of contributing to the advance of the science and the technology through research and application of High Performance Computing and communications, in collaboration with other institutions, for the welfare of society.

More information:

upc.cesga.es

Contact:
promocion@cesga.es
upc@cesga.es
0034 981 569 810

Partners:

www.cesga.es
www.hp.com
gac.des.udc.es
www.ac.usc.es

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